

Serial No. 09/468,471

PATENT PA060-US

REMARKS/ARGUMENTS

Claims 41-50 and 52-78 are pending in the application. Of these, claims 56-67 are withdrawn from consideration as being drawn to a non-elected invention. Reexamination and reconsideration of the application are respectfully requested based on the following remarks.

Claim Rejections Under 35 U.S.C. § 102

Claims 41-45, 47, 48 52-55, 68, 69 and 75-77 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 3,142,296 to Love ("Love"). This rejection is respectfully traversed. The Examiner states that Love discloses a liquid-to-liquid blood oxygenation assembly, however, as Applicants will explain, Love does not disclose a liquid-to-liquid blood oxygenation assembly, but rather a more conventional gas-to-liquid blood oxygenation assembly.

The Examiner states that in Love a mixing chamber (1) has two inlets, one for the delivery of blood (3) and one for the delivery of oxygen (24). Claim 41 requires a mixing chamber having a first inlet delivering a first fluid and a second inlet delivering "a second fluid having a liquid phase supersaturated with a gas." Neither of the two inlets of the Love mixing chamber meets this requirement of the second inlet of claim 41. The Examiner states that within the interior of the pressurized chamber of Love, gas dissolves in the blood thereby creating a fluid having a greater concentration of gas than the blood originally did. However, the formation of gas-enriched blood within the chamber, does not meet the requirement of claim 41, which requires a gas-supersaturated liquid phase to enter the chamber via the second inlet.

Claim 68 requires the act of "mixing blood flowing vortically within a mixing chamber and an oxygen-supersaturated fluid to effect liquid-to liquid oxygenation." Thus the formation of oxygen-enriched blood in claim 68 occurs through the transfer of oxygen from the oxygen-supersaturated fluid to the blood upon mixing, a true "liquid-to-liquid" oxygenation process. In Love, oxygenation occurs through the transfer of gaseous oxygen, introduced to the pressurized chamber, into blood. Gas-enriched blood forms as the blood enters the top of the chamber, travels along the walls of the cylindrical chamber (not a vortical flow path) and pools at the bottom of the chamber, however, there is no direct mixing of the blood entering the chamber and

Serial No. 09/468,471

PATENT PA060-US

the gas-enriched blood collected at the bottom of the chamber. Thus, the conventional gas-to-liquid oxygenation process of Love does not meet the elements of claim 68.

Claims 42-45, 47, 48 and 52-55 depend from claim 41. Claims 69 and 75-77 depend from claim 68. These claims are allowable for at least the same reasons as claims 41 and 68 as described above.

For these reasons, the withdrawal of the rejection of claims 41-45, 47, 48, 52-55, 68, 69 and 75-77 under 35 U.S.C. § 102(b) is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 49, 50, 70-74 and 78 stand rejected under 35 U.S.C. § 103(a) as obvious over Love and U.S. Patent No. 5,084,011 to Grady ("Grady"). This rejection is respectfully traversed.

Claims 49 and 50 depend from claim 41. Claims 70-74 and 78 depend from claim 68. Love does not substantially disclose the invention of claims 41 and 68 as described above, and consequently of claims 49, 50, 70-74 and 78. Grady does not make up for the deficiencies in Love. If one were to combine the disclosures of Love and Grady, one would still not arrive at the present invention, which requires not only that the gas-enriched fluid is hyperoxic hyperbaric, or that the fluids are mixed at a pressure greater than 760 mmHg, but that a gas-supersaturated fluid enters a mixing chamber to mix with a first fluid or that a liquid-to-liquid oxygenation is effected. None of these limitations are described or suggested by Grady alone, or in combination with Love.

Claim 46 stands rejected under 35 U.S.C. § 103(a) as being obvious over Love in view of U.S. Patent No. 5,693,017 to Spears ("Spears"). This rejection is respectfully traversed.

Claim 46 depends from claim 41. Love does not substantially disclose the invention of claim 41, as described above, and consequently of claim 46. Spears does not make up for the deficiencies of Love. If one were to combine the disclosures of Love and Spears, the invention

Serial No. 09/468,471

PATENT PA060-US

of claim 46 would still not be suggested. Not only does claim 46 require that the liquid phase of the second fluid is physiological saline, but also that the second fluid that is supersaturated with a gas enters a mixing chamber and mixes with blood, or that a liquid-to-liquid mixing is accomplished through mixing an oxygen-supersaturated fluid with vortically flowing blood. None of these limitations are described or suggested in Spears, alone or in combination with Love.

The foregoing rejections of claims under 35 U.S.C. § 103 are therefore requested to be withdrawn.

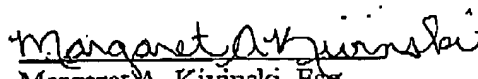
In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the telephone number given below to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1769.

Respectfully submitted,

Date: March 15, 2004


Margaret A. Kivinski, Esq.
Registration No. 38,517
Attorney for Applicant(s)
TherOx, Inc.
2400 Michelson Drive
Irvine, California 92612
Phone: 949-757-1999
Fax: 949-757-1989